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(71) Applicant  
**Valeo Nelman**

(Incorporated in France)

12 Bis, Rue Maurice Berteaux, 78290 Croissy-Sur-Seine, France

(72) Inventor  
**Jean Leflour**

(74) Agent and/or Address for Service  
**Page White & Farrer**  
 54 Doughty Street, London, WC1N 2LS,  
 United Kingdom

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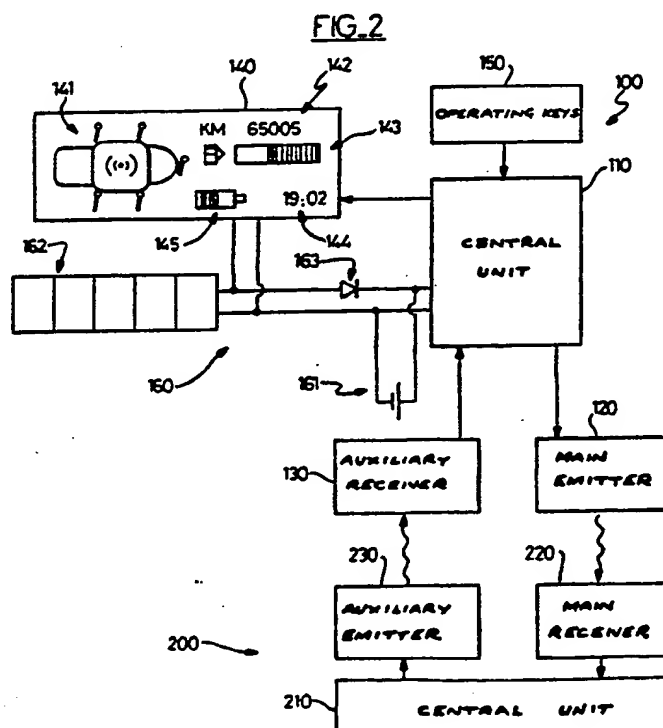
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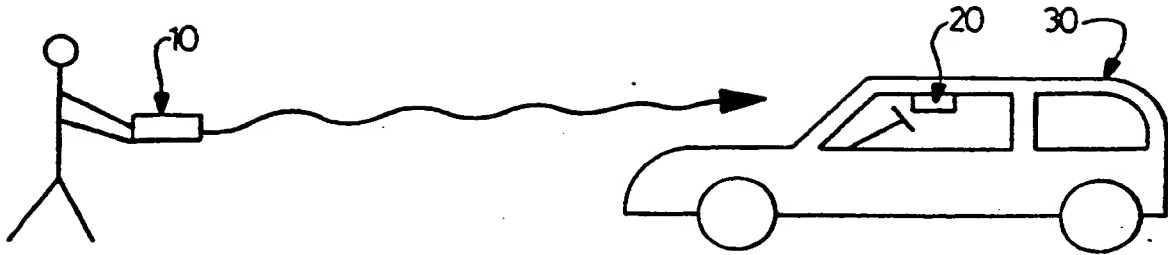
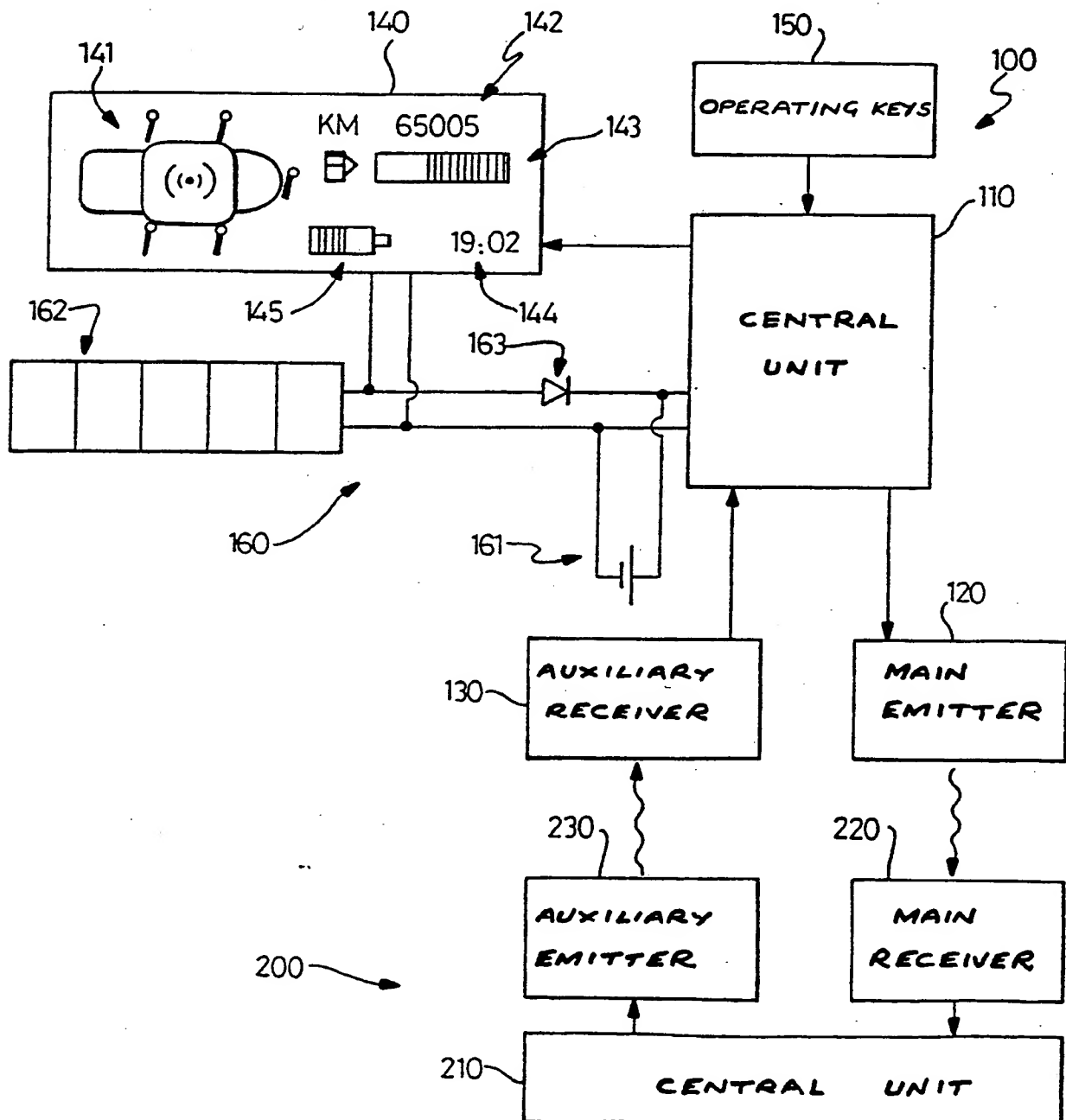
(54) **Remote control of e.g. automotive vehicle doors**

(57) A remote control system, for locking and unlocking devices e.g. doors, of an automotive vehicle, includes a main emitter (120) to generate a coded electromagnetic wave and located in a portable unit (100), and a main receiver (220), mounted in the vehicle to receive and decode the signal generated by the main emitter. The system further includes:

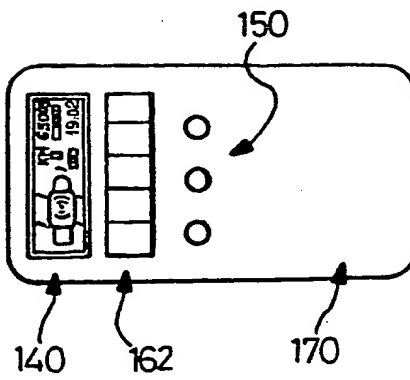
- an auxiliary emitter (230) mounted in the vehicle to generate an auxiliary signal indicative of the state of the vehicle;
- an auxiliary receiver (130) mounted in the portable unit for receiving the auxiliary signal; and
- indicating means (140) carried on the portable unit for displaying the said state.



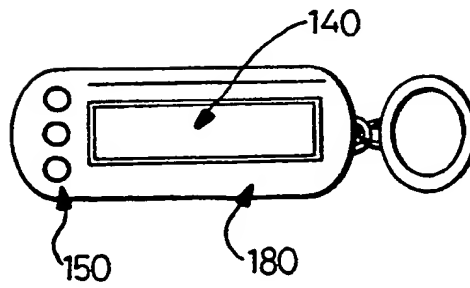
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FIG. 1: PRIOR ARTFIG. 2

FIG\_3



FIG\_4



## A REMOTE CONTROL SYSTEM, IN PARTICULAR FOR CONTROLLING AUTOMOTIVE VEHICLE DOORS

This invention relates to remote control systems for locking and unlocking openable members of an automotive vehicle, and particularly its doors.

Figure 1 of the accompanying drawings indicates diagrammatically a typical remote control system of the above kind, in a form generally known at the present time. It comprises a portable unit 10 and a receiver 20 which is mounted in the vehicle 30. The emitter 10 is arranged to generate a coded electromagnetic wave, while the receiver 20 is arranged to receive the electromagnetic wave which is generated by the emitter 10, and to decode it. When the code generated by the emitter 10 corresponds to a predetermined code, the receiver 20 then controls the locking and/or unlocking of the openable elements, such as doors, tailgate and/or boot, of the vehicle 30, or of any required auxiliary parts of the vehicle.

Remote control systems of the general kind typified in Figure 1 and described above have given good service. However, an object of the invention is to improve such systems.

To this end, the present invention proposes a remote control system for locking and unlocking openable members of an automotive vehicle, for example the doors of the vehicle, wherein the system comprises: a main emitter adapted to generate a coded electromagnetic wave and located in a portable unit; a main receiver mounted in the vehicle and so designed as to receive and decode the signal generated by the main emitter; an auxiliary emitter mounted in the vehicle and arranged to generate an

auxiliary signal which is indicative of parameters linked to the state of the vehicle; an auxiliary receiver which is mounted in the housing of a portable unit for receiving the auxiliary signal; and indicating means carried on the housing of the portable unit for displaying the said parameters.

A particular result of the use of the present invention is that control of the operation of the system is improved. In particular, because of the indicating means which are provided, it becomes possible to verify the locking or unlocking of the vehicle doors.

Preferred embodiments of the invention will now be described, by way of example only and with reference to the accompanying drawings, in which:-

Figure 1, already described above, illustrates the present state of the art;

Figure 2 is a diagrammatic representation of the remote control system in accordance with the invention, shown diagrammatically and in the form of a block diagram indicating functional blocks of the system; and

Figures 3 and 4 show two embodiments of the portable unit according to the invention.

The general structure of a remote control system according to this invention is illustrated in Figure 2, in which the portable unit or module 100 essentially includes a central unit 110, a main emitter 120, an auxiliary receiver 130, indicating means 140, a key pad 150 having a group of operating keys, and supply means 160.

In addition, on the automotive vehicle itself, a control

module 200 is provided. This includes a central unit 210, a main receiver 220 and an auxiliary emitter 230.

As has been indicated above, the central unit 110, which is located in the housing of the portable unit 100, and the main emitter 120 associated with it, are so designed as to generate a coded electromagnetic wave, while the main receiver 220 and the central unit 210, which is associated with the latter and located in the vehicle itself, are so designed as to receive and to decode this electromagnetic wave. When the code generated by the emitter 120 corresponds to a predetermined code, the receiver 220 and the central unit 210 associated with it control the locking and unlocking, respectively, of the doors of the vehicle.

In addition, the auxiliary emitter 230 which is associated with the central unit 210 is so designed as to generate an auxiliary electromagnetic wave which is indicative of parameters linked to the current state of the vehicle. The auxiliary electromagnetic wave thus generated is received by the auxiliary receiver 130 and decoded by the associated central unit 110. The latter then controls the indicating means 140 accordingly. The indicating means 140 are preferably of the liquid crystal type.

In the embodiment shown diagrammatically in Figure 2, the indicating means 140 are designed so as to display the following parameters:

- the state of opening of the vehicle (four doors plus boot) in the form of a symbol 141;
- vehicle mileage in the form of a digital value 142 (in this example expressed in kilometres);

- fuel level in the fuel tank, in the form of a bar display 143;
- a digital indication 144 of the time of day; and
- an indication of the state of the supply means 160, the latter being in the form of a dry battery diagrammatically indicated at 145.

The indicating means 140 are of course not restricted to the particular forms indicated diagrammatically in Figure 2. In particular, they may be arranged to display other functions, or only some of those functions which are shown diagrammatically in Figure 2. In addition, the display of the various functions is not limited to the particular forms of display shown in Figure 2.

The supply means 160 may comprise a dry battery 161, or an equivalent rechargeable battery. The supply means 160 may alternatively consist of a group of solar cells 162. The solar cells 162 may, if need be, be associated with a rechargeable battery 161. In that case, a protective diode 163 is arranged between the solar cells 162 and the rechargeable battery 161. In practice, a rechargeable accumulator, associated with solar cells, is preferred on the ground that it enables better security of the system to be obtained.

The keys on the key pad 150 may be used for activating the emission of the coded electromagnetic wave by the main emitter 120, and/or for the display of the parameters concerned on the display means 140, and/or for any other desired type of function.

As is indicated in Figure 3, the portable unit 100, which includes the elements 110 to 160, may be in the form of a

credit card 170. In another embodiment which is shown in Figure 4, the housing of the portable unit, in which the elements 110 to 160 are mounted, may be in the form of a key holder 180.

As indicated above, the emission of the main coded electromagnetic wave by the main emitter 120 may be initiated by activating a key on the key pad 150. If necessary, the emission of this coded electromagnetic wave by the emitter 120 may be initiated automatically by the module 200 located in the vehicle itself, when the portable unit 100 is brought close to the vehicle.

The invention is of course not limited to the particular embodiments which have just been described, but extends to all variants that are in conformity with its spirit.



**CLAIMS**

1. A remote control system for locking and unlocking openable members of an automotive vehicle, wherein the system comprises: a main emitter adapted to generate a coded electromagnetic wave and located in a portable unit; a main receiver mounted in the vehicle and so designed as to receive and decode the signal generated by the main emitter; an auxiliary emitter mounted in the vehicle and arranged to generate an auxiliary signal which is indicative of parameters linked to the state of the vehicle; an auxiliary receiver which is mounted in the housing of a portable unit for receiving the auxiliary signal; and indicating means carried on the housing of the portable unit for displaying the said parameters.
2. A remote control system according to Claim 1, wherein the portable unit comprises a central unit, the main emitter, the auxiliary receiver, the indicating means, and supply means.
3. A remote control system according to Claim 1 or Claim 2, wherein the indicating means are arranged to display the state of the openable parts of the vehicle.
4. A remote control system according to any one of Claims 1 to 3, wherein the indicating means are arranged to display at least one of the following parameters: the recorded mileage of the vehicle; the amount of fuel present in the vehicle; a clock function; the state of the alarm function of the vehicle; and the state of the electrical supply means of the portable unit.
5. A remote control system according to any one of Claims 1 to 4, wherein the housing of the portable unit carries a group of operating keys.

6. A remote control system according to any one of Claims 1 to 5, wherein the said supply means are selected from the group comprising a dry battery, a rechargeable battery, and solar cells.

7. A remote control system according to any one of Claims 1 to 6, wherein the portable unit is arranged in the form of a credit card.

8. A remote control system according to any one of Claims 1 to 6, wherein the portable unit is arranged in the form of a key holder.

9. A remote control system for locking and unlocking openable members of an automotive vehicle, for example doors of the vehicle, substantially as described in the foregoing description with reference to Figure 2 and either Figure 3 or Figure 4 of the accompanying drawings.